

We claim:

21. (amended): A [rotation support apparatus for] A heat-dissipation fan, comprising:

a. a rotor, further comprising a permanent magnet surrounding the center of said rotor, a case surrounding said magnet, a plurality of fan blades radiating outwardly from said case, and a hollow tubular bearing, fixedly and concentrically mounted to [the] said rotor [of said fan];

b. a base member of said fan, further comprising a base in which said fan is mounted, a stator coil wound around the center of said base member which generates magnetic forces when said fan is in operation, a means for energizing said coil when said fan is in operation, and a hollow tubular bearing fixedly mounted to [the base of] said fan base, said bearing mounted in such a position on said fan base, so as to form a linear tubular opening when said fan rotor is placed next to said fan base for normal fan operation;

c. a cylindrical axial tube of sufficient length to fit through the bearing mounted to said rotor and the bearing mounted to said fan base, with sufficient excess length to allow the end of said axial tube to protrude from said fan base when the other end of said axial tube is placed loosely against the bearing mounted to said fan rotor; and

d. a retaining ring placed around said axial tube at the end of said axial tube which protrudes from said fan base.

22. (previously presented): The apparatus as in Claim 21, in which said axial tube is not fixedly attached to either of the aforementioned bearings, but is permitted to rotate freely within the space available to it when it is received by the two aforementioned bearings.

23. (previously presented): The apparatus as in Claim 22, in which the separation between the exterior surface of said axial tube and the interior surfaces of the two aforementioned bearings is ten microns or less.

24. (amended): The apparatus as in Claim 21, in which said axial tube further comprises a flange at one end thereof, for placement in proximity with the rotor of said fan, [said flange serving to provide a loose fit between said fan rotor and said axial tube.]

25. (amended): The apparatus as in Claim 24, in which said the exterior surface of said axial tube is of a concave shape, [or grooved, to reduce friction between said axle tube and the bearings which receive it.]

26. (amended): The apparatus as in Claim 21, in which said retaining ring does not contain the shape of a complete circle, but contains a [n opening or] gap in the circular structure.

27. (amended): The apparatus as in Claim 21, in which [all components mentioned in Claim 11] said bearings, axial tube and retaining ring are made of ceramic material.

28. (amended): The apparatus as in Claim 27, in which said ceramic material is composed of a substance taken from the group consisting of aluminum oxide, zirconium oxide or silicon oxide [or a combination of any and all of these materials].

29. (amended): A heat-dissipation fan comprising a rotor, a fan base and a rotation support apparatus [for a heat-dissipation fan comprising] for said fan, said rotation support apparatus further comprising: a bearing fixedly mounted to the rotor of said fan, a bearing fixedly mounted to the base of said fan, an axial tube which fits inside said bearings, and a retaining ring located in proximity to said fan base, and which holds said axial tube in place, where the improvement consists of the ability of said axial tube to rotate freely when it is placed inside said bearings, with the result that said axial tube rotates slowly and asynchronously with the rotor of said fan when said fan is in operation.

30. (new): The apparatus as in Claim 25, in which the exterior surface of said axial tube is grooved.

31. (new): The apparatus as in Claim 28, in which said ceramic material is composed of a combination of the substances mentioned in Claim 28.